



MAX14885E Evaluation Kit

General Description

The MAX14885E evaluation kit (EV kit) is a fully assembled and tested surface-mount PCB that utilizes the MAX14885E device to implement a complete video graphics array (VGA) 2:2 crossover switch, which is specifically applicable for switchable graphics in PC laptops.

VGA input/output connections are provided to easily interface the EV kit with VGA-compatible devices. Pushbuttons on the EV kit control all the device functions. This EV kit powers itself from either a VGA source, or optionally through a 5V power supply.

Features

- ◆ Complete VGA 2:2 Crossover Switch
- ◆ Self-Powered or Single 5V Power Supply
- ◆ VGA Inputs and Outputs
- ◆ Jumper-Free Design
- ◆ Can Be Wired into Existing Designs
- ◆ Surface-Mount Construction
- ◆ Fully Assembled and Tested

Ordering Information

PART	TYPE
MAX14885EEVKIT+	EV Kit

+Denotes lead(Pb)-free and RoHS compliant.

Component List

DESIGNATION	QTY	DESCRIPTION
BA, BB, GA, GB, HA, HB, RA, RB, SCLA, SCLB, SDAA, SDAB, VA, VB	0	Not installed, test points
C1, C9, C10	3	10 μ F \pm 10%, 6.3V X7R ceramic capacitors (1206) Murata GRM31CR70J106K
C2–C8, C11–C14	11	0.1 μ F \pm 10%, 16V X7R ceramic capacitors (0603) Murata GRM188R71C104K
D1, D2, D3	3	40V Schottky diodes (SOD123) Vishay SD103AW Diodes Inc. SD103AW
D4–D7	4	Ultra-bright green LEDs (1206)
D8–D11	4	Yellow LEDs (1206)
J1–J4	4	R/A, D-sub, HD 15-position female VGA ports
J5	1	8-pin header, 0.1in centers
P1, P3, P4	3	Red multipurpose test points
P2	1	Black multipurpose test point

DESIGNATION	QTY	DESCRIPTION
Q1	1	npn transistor (SOT23) Fairchild MMBT5088
R1, R15–R18	0	Not installed, resistors (0603) R1 is short (PC trace); R15–R18 are open
R2–R9	8	1.5k Ω \pm 5% resistors (0603)
R10, R19–R22	5	4.7k Ω \pm 5% resistors (0603)
R11–R14	4	33 Ω \pm 5% resistors (0603)
SW1, SW2, SW3	3	Pushbuttons, normally open
U1	1	VGA 2:2 crossover switch (40 TQFN-EP*) Maxim MAX14885EETL+
U2, U3, U6, U7, U10	5	On/off controllers with debounce (6 SOT23) Maxim MAX16054AZT+
U4, U5, U8, U9	4	SPDT analog switches (6 SOT23) Maxim MAX4624EZT+
—	1	PCB: MAX14885E EVALUATION KIT+

*EP = Exposed pad.

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Component Suppliers

SUPPLIER	PHONE	WEBSITE
Diodes Incorporated	805-446-4800	www.diodes.com
Murata Electronics North America, Inc.	770-436-1300	www.murata-northamerica.com
Fairchild Semiconductor	888-522-5372	www.fairchildsemi.com
Vishay	402-563-6866	www.vishay.com

Note: Indicate that you are using the MAX14885E when contacting these component suppliers.

Quick Start (Application Circuit)

Recommended Equipment

- MAX14885E EV kit
- Two VGA sources (e.g., notebook computer)
- Two VGA-compatible devices (e.g., monitor)
- Four VGA cables

Procedure

The MAX14885E EV kit is fully assembled and tested. Follow the steps below to verify board operation:

- 1) Connect the first VGA source to J1 (VGA SOURCE "A").
- 2) Connect the second VGA source to J2 (VGA SOURCE "B").
- 3) Connect the first VGA-compatible device to J3 (VGA MONITOR "1").
- 4) Connect the second VGA-compatible device to J4 (VGA MONITOR "2").
- 5) Enable both VGA sources.
- 6) Verify that LEDs D5, D7, D9, and D11 are all lit.
- 7) Verify that the monitor connected to VGA MONITOR "1" displays the material from the VGA source at VGA SOURCE "A".

Detailed Description of Hardware

The MAX14885E EV kit is a fully assembled and tested surface-mount PCB that utilizes the MAX14885E device to implement a complete video graphics array (VGA) 2:2 crossover switch.

VGA input/output connections are provided to easily interface the EV kit with VGA-compatible devices. The standard option of the EV kit powers directly from either VGA source.

Three pushbutton switches (SW1, SW2, and SW3) provide all control for this EV kit. Test points optionally allow powering the EV kit from an external source.

Input Power Supply

The EV kit powers directly from either a VGA source, or optionally through an external power supply. This is all accomplished automatically with Schottky diodes D1, D2, and D3.

The user can optionally power the EV kit from an external power supply. In this case, connect a 5V supply between P1 (EXT 5V) and P2 (GND). The actual voltage reaching the circuitry can be monitored at P3 (VCC) to account for the drop across the diode.

EV Kit Control

The device functionality occurs through pushbutton switches SW1, SW2, and SW3, with state indication through eight LEDs (D4–D11). SW1 and SW2 control source-to-monitor signal connections RGBHV and DDC, respectively. SW3 enables/disables the device.

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RGBHV Control (SW1)

Each depression of switch SW1 (RGBHV (GREEN)) alternates connecting one of the VGA sources to one of the VGA monitors. One green LED on the source side and one on the monitor side light to indicate which source connects to which monitor for the R_, G_, B_, H_, and V_ signals.

DDC Control (SW2)

Each depression of switch SW2 (DDC (AMBER)) alternates connecting one of the VGA sources to one of the VGA monitors. One yellow LED on the source side and one on the monitor side light to indicate which source connects to which monitor for the SCL_ and SDA_ signals.

Device Enable (SW3)

Each depression of switch SW3 (ENABLE) alternates between enabling and disabling the device.

External Connections

The EV kit can be modified to connect directly to a circuit that provides VGA signals, such as a graphics controller IC. To do this, perform the following steps:

- 1) Remove U2, U3, U6, U7, and U10.
- 2) Connect a supply at the same voltage as the I/O on the circuit, between P4 (VVL) and P2 (GND).
- 3) Wire the control signals as desired, through jumper J5.
- 4) Wire the VGA signals to seven or all 14 test points.
- 5) Connect a 5V supply between P1 (EXT 5V) and P2 (GND). Turn this supply on.
- 6) Turn on the supply to P4 (VVL).

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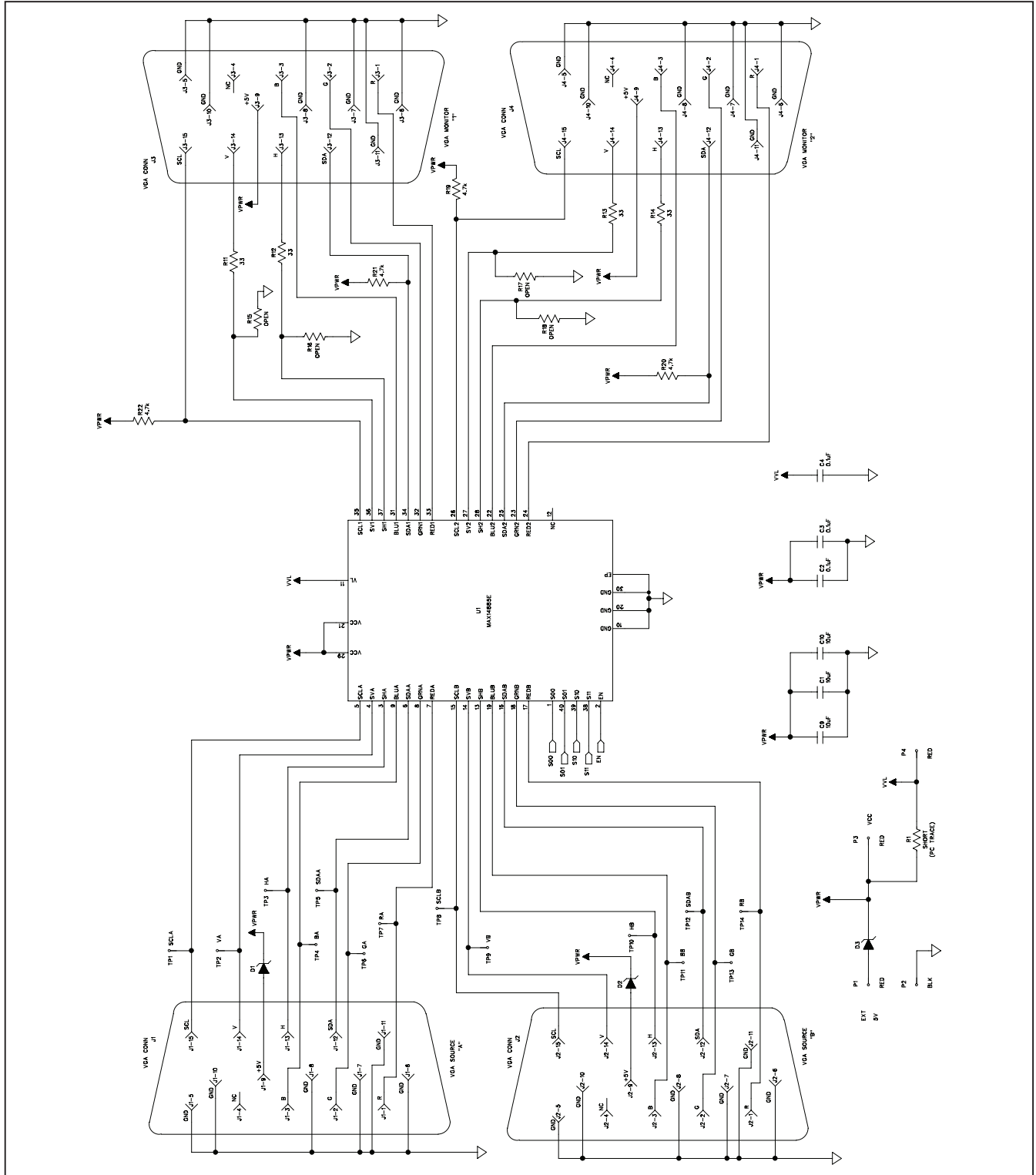


Figure 1a. MAX14885E EV Kit Schematic—Application Circuit (Sheet 1 of 2)

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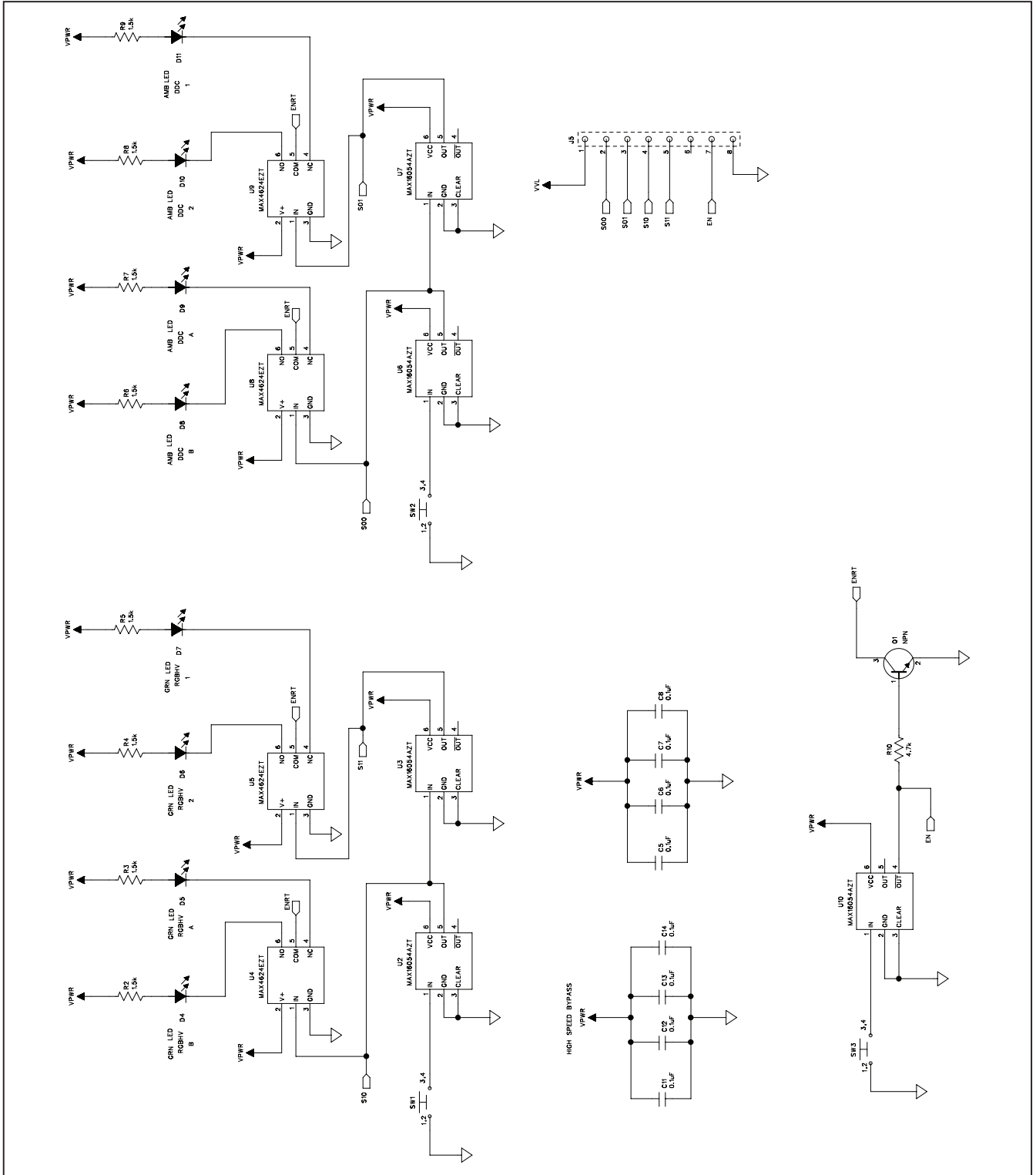


Figure 1b. MAX14885E EV Kit Schematic—Characterization Circuit (Sheet 2 of 2)

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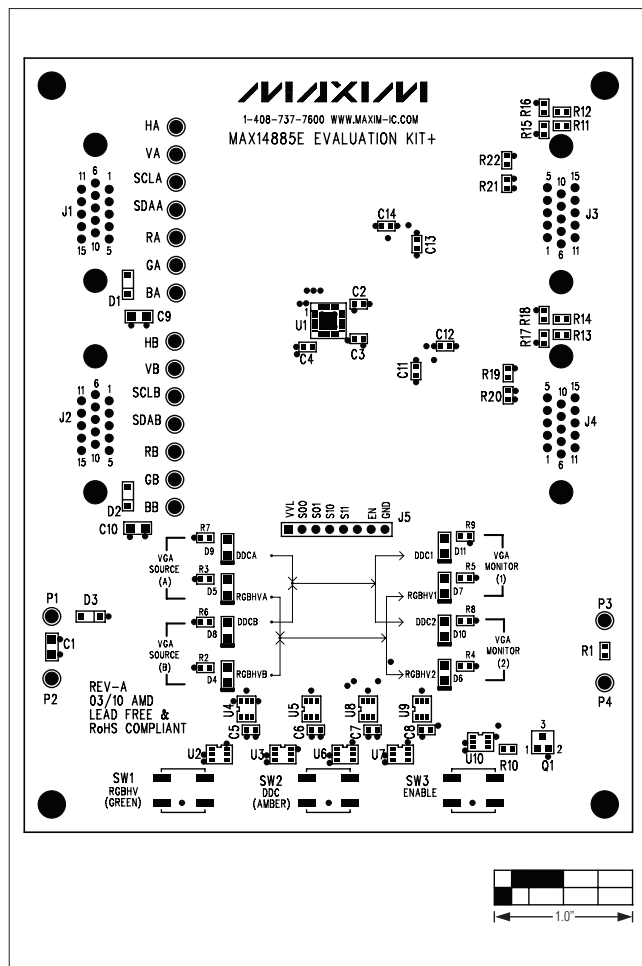


Figure 2. MAX14885E EV Kit Component Placement Guide—Component Side

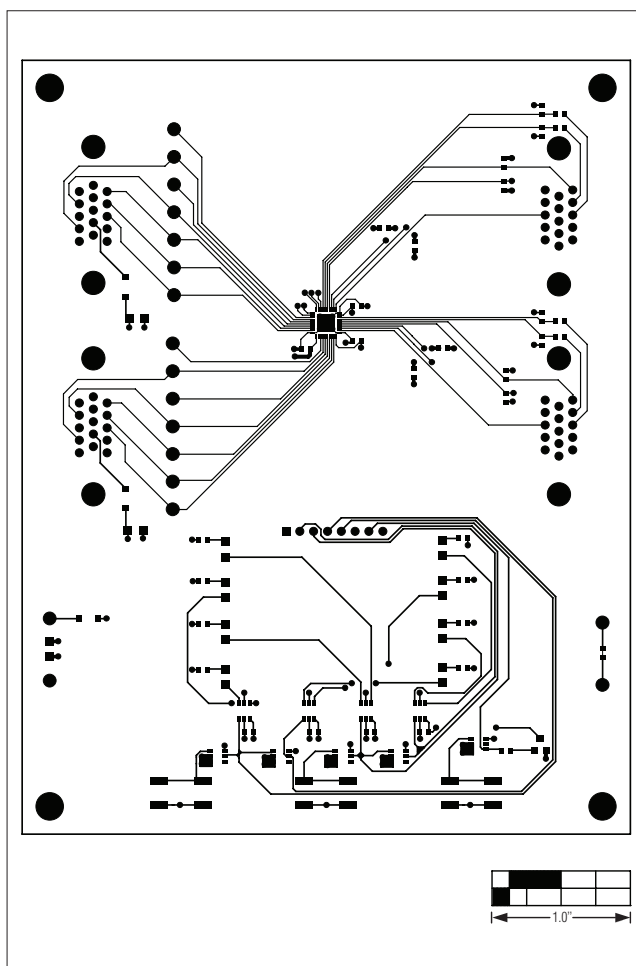


Figure 3. MAX14885E EV Kit PCB Layout—Component Side

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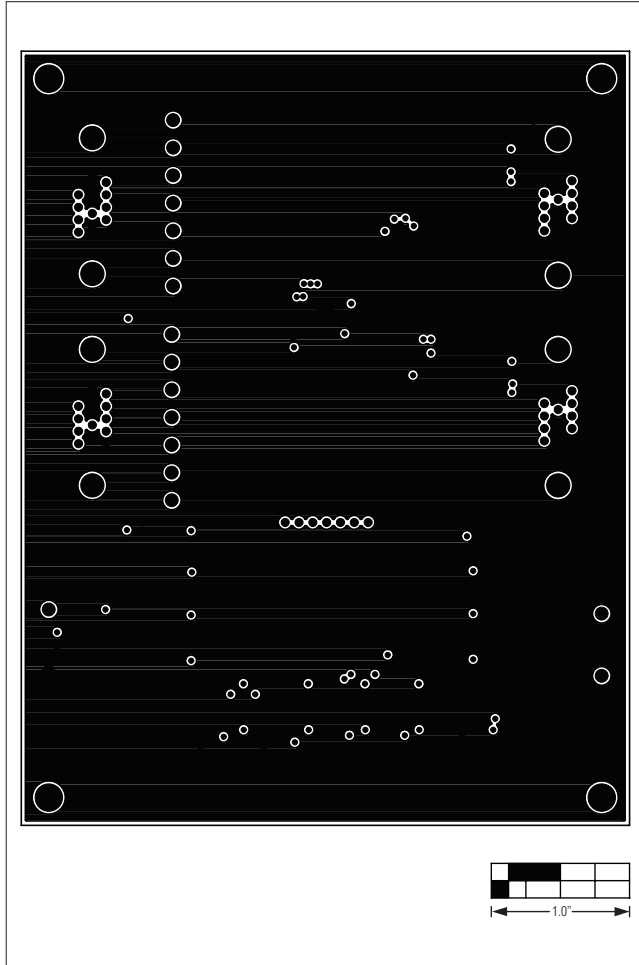


Figure 4. MAX14885E EV Kit PCB Layout—Internal Layer 2

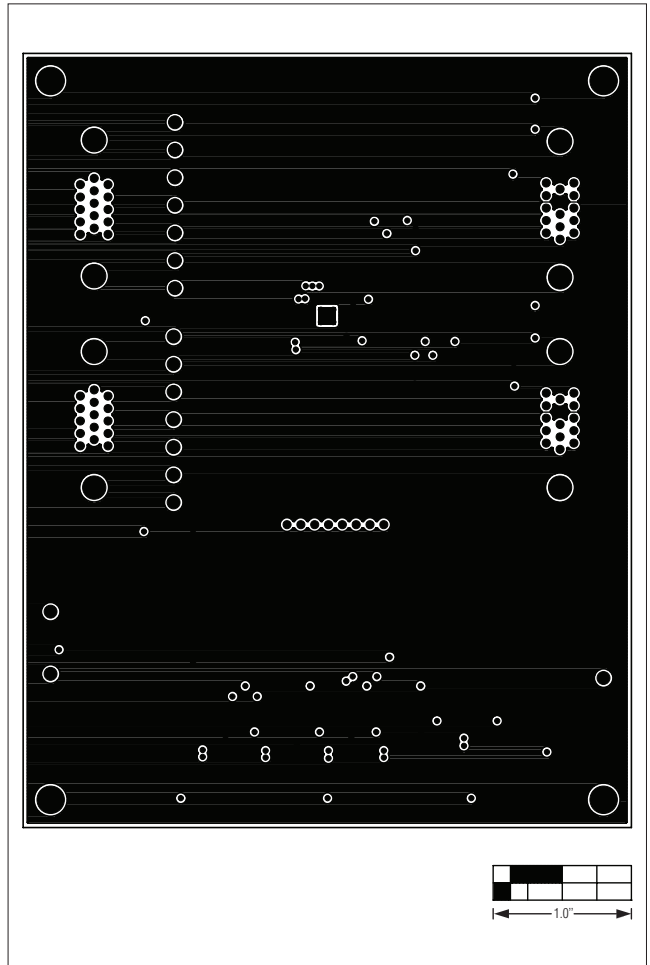


Figure 5. MAX14885E EV Kit PCB Layout—Internal Layer 3

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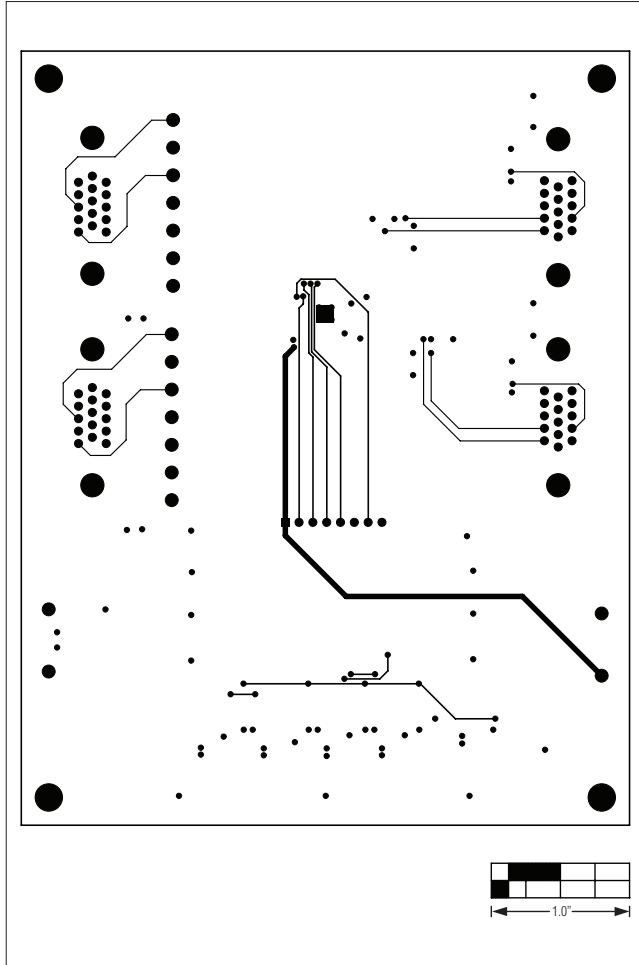


Figure 6. MAX14885E EV Kit PCB Layout—Solder Side

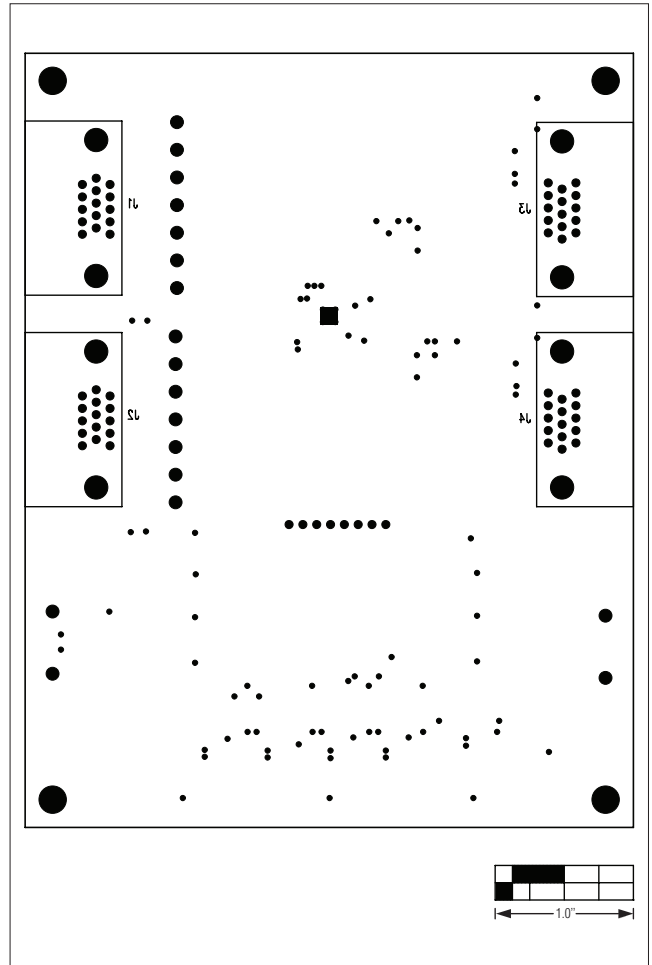


Figure 7. MAX14885E EV Kit Component Placement Guide—Solder Side

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Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	4/10	Initial release	—

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Maxim cannot assume responsibility for use of any circuitry other than circuitry entirely embodied in a Maxim product. No circuit patent licenses are implied. Maxim reserves the right to change the circuitry and specifications without notice at any time.

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